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ductive function after it has been deprived of roots. Why, in the present case, it did not do this in the first year, rather than in the second, is not clear. Evidently its vigor and resources must have been greater then ; for there could have been no gain, and there must have been some loss. Perhaps it was that unexplained force which sometimes causes a starved and dying plant to throw all its remaining strength into a final effort for the perpetuation of its species.

The production of secondary, and quasi-lateral, inflorescences is not uncommon in agaves, both in cultivation and when growing wild. As is well understood, they are produced by offsets, either developed or latent.

SAN BERNARDINO, CALIFORNIA,  
December 20, 1902.

## A KEY TO THE NORTH AMERICAN SPECIES OF LENTINUS—I

By F. S. EARLE

The genus *Lentinus* was founded by Fries in 1825.\* From the first it has been an incongruous aggregate consisting of several groups of quite diverse species which agree only in a certain toughness of texture. In outlining the original generic characters, Fries says the lamellae are concrete with the pileus, while in *Agaricus* he says they are discrete. This character, however, is shared with *Panus*, which thus seems to differ only in being still firmer in texture. Many species of *Lentinus* have the lamellae more or less lacerate or dentate on the margin, but, from the first, species have been included in the genus without this character.

The genus is now usually divided into the seven following sections :

### KEY TO THE SECTIONS OF LENTINUS

- |  |                         |
|--|-------------------------|
| 1. Stipe central or excentric ; pileus entire. | 2. ( <i>Mesopodes</i> ) |
| Stipe lateral or wanting ; pileus dimidiate.   | PLEUROTI.               |
| Stipe wanting ; pileus resupinate.             | RESUPINATI.             |

\* Syst. Orb. Veg. 77. 1825.

- |                                  |  |
|----------------------------------|--|
| 2. Pileus hairy or strigose.     | CRINITI.   |
| Pileus scaly.                    | LEPIDEI.   |
| Pileus pulverulent.              | PULVERULENTI (see <i>Criniti</i> in following keys). |
| Pileus glabrous, lobed, unequal. | COCHLEATI.   |
| Pileus glabrous, regular.        | CORNUCOPIOIDES.                                      |

There are some reasons for considering the *Criniti* as the typical section of the genus and when it comes to be divided, as it doubtless will be, the name should probably be retained for this section, which constitutes a very homogeneous group of mostly tropical species. They are all thin, deeply depressed to infundibuliform and have a conspicuous hairy vestiture. The *Pulverulenti* agree closely with this section and so far as the North American species are concerned should be united with it as has been done in the following keys. These species differ only in a somewhat shorter vestiture, but they are distinctly velvety with close short hairs, not truly pulverulent.

The *Lepidei* constitute another homogeneous group having little in common with the *Criniti*. In these the pileus is thick and fleshy though firm and rather tough and the shape is convex rather than depressed but usually with the center umbilicate. The surface of the pileus usually breaks into more or less conspicuous innate scales. In the young state there is a distinct cortina covering the lamellae but this disappears without leaving an annulus on the stem.

The *Cochleati* are many of them densely cespitose. They are comparable to the cespitose section of *Clitocybe*. Neither this section nor the *Cornucopioides* are well defined homogeneous groups like the other two. The species now assigned to the *Pleuroti* and *Resupinati* will probably ultimately be assigned to *Pleurotus* and *Panus*, where they seem to be more closely related than to the other well-defined groups of *Lentinus*.

KEY TO THE SPECIES OF LENTINUS  
Section CRINITI (including PULVERULENTI)

- |  |     |
|--|-----|
| 1. Pileus regular; stipe central.                    | 2.  |
| Pileus irregular; stipe often excentric.             | 26. |
| 2. Pileus strigose or villous or the margin ciliate. | 3.  |
| Pileus velvety ( <i>Pulverulenti</i> ).              | 25. |
| 3. Hairs of the pileus free, not fascicled.          | 4.  |
| Hairs of the pileus more or less fascicled.          | 13. |

- |   |                                   |
|---|-----------------------------------|
| 4. Pileus villous, hairs mostly soft and appressed.                     | 5.                                |
| Pileus strigose or setose, often erect, or some scale-like.             | 9.                                |
| 5. Pileus infundibuliform; stipe mealy, or floccose-scaly.              | 6.                                |
| Pileus umbilicate or depressed; stipe fibrillose or velvety.            | 7.                                |
| 6. Pileus dark reddish-brown; stipe slightly mealy.                     | <i>L. crinitus</i> (L.) Fr.       |
| Pileus pale cervinus; stipe floccose-scaly.                             | <i>L. subcervinus</i> B. & C.     |
| 7. Stipe velvety; pileus becoming glabrate, margin ciliate.             | <i>L. blepharodes</i> B. & C.     |
| Stipe fibrillose; hairs of the pileus persistent.                       | 8.                                |
| 8. Lamellae pallid; stipe white.  | <i>L. Wrightii</i> B. & C.        |
| Lamellae white; stipe brown.  | <i>L. villosus</i> Klotzsch*      |
| 9. Pileus deeply infundibuliform.                                       | 10.                               |
| Pileus only depressed or umbilicate.                                    | 11.                               |
| 10. Pileus with disc glabrate; stipe spotted.                           | <i>L. chaetoloma</i> Fr.          |
| Pileus with the disk minutely scaly; stipe hispid.                      | <i>L. strigellus</i> Berk.        |
| 11. Stipe subvillous, apex black-punctate, cervinus.                    | <i>L. stupens</i> Klotzsch†       |
| Stipe subsquamulose.  | 12.                               |
| 12. Stipe white; pileus 4 cm., deeply umbilicate.                       | <i>L. rigidulus</i> B. & C.       |
| Stipe brownish-yellow; pileus 12 mm., subglobose.                       | <i>L. Schweinitzii</i> Fr.        |
| 13. Stipe glabrate to furfuraceous-squamulose.                          | 14.                               |
| Stipe strigose, villous or velvety.                                     | 19.                               |
| 14. Pileus convex, yellow, the disc furfuraceous-velvety.               | <i>L. chrysoplepus</i> B. & C.    |
| Pileus infundibuliform.   | 15.                               |
| 15. Stipe nearly black; margin of pileus strongly revolute.             | <i>L. nigripes</i> Fr.            |
| Stipe nearly black; margin of pileus not revolute.                      | <i>L. Leveillei</i> Berk.         |
| Stipe subconcolorous or paler.  | 16.                               |
| 16. Pileus cervinus, with soft appressed hairs, disc becoming glabrate. | 17.                               |
| Pileus much paler, pilose-tomentose; stipe glabrous.                    | <i>L. Swartzii</i> Berk.          |
| 17. Lamellae pallid, not anastomosing; stipe subglabrous.               | <i>L. tener</i> Klotzsch          |
| Lamellae pale cervinus, anastomosing behind; stipe furfuraceous.        | 18.                               |
| 18. Lamellae not glandular.   | <i>L. Schomburgkii</i> Berk.      |
| Lamellae glandular, punctate.   | <i>L. Schomburgkii</i> var. Berk. |
| 19. Pileus infundibuliform.   | 20.                               |
| Pileus umbilicate or depressed.   | 22.                               |
| 20. Pileus large, 18-24 cm.   | <i>L. Sullivantii</i> Mont.       |
| Pileus smaller, 4-8 cm.   | 21.                               |
| 21. Lamellae reddish, velvety next the stipe.                           | <i>L. caelopus</i> Lév.           |
| Lamellae pallid, glabrous, entire.                                      | <i>L. Nepalensis</i> Berk.        |

\* The type of this species was from the island of Mauritius, east of Madagascar. It is doubtful if it occurs in this hemisphere, though much material from tropical America has been referred to it.

† This species also is from Mauritius and is very doubtfully American.

22. Pileus with hairs in stalked pyramidal fascicles. *L. pyramidatus* B. & C.  
Pileus not as above. 23.
23. Pileus orange, hairs of two kinds, lanate and rigid. *L. siparius* B. & C.  
Pileus cervinous, strigose; stipe farinose above. *L. Nicaraguensis* B. & C.  
Pileus fuscous or fulvous. 24.
24. Pileus small (1.25 cm.), membranous-coriaceous, totally covered with short  
deciduous fascicled hairs. *L. Leprieurii* Mont.  
Pileus 3 cm., fascicles of hairs toward the center, scattered and depressed.  
*L. sparsibarbis* B. & C.
25. Stipe thick, tapering downward, 4-5 cm.  $\times$  5-10 mm. *L. castaneus* Ell. & McB.  
Stipe elongated, cylindrical, radicating, reaching 15 cm.  $\times$  3-5 mm.  
*L. velutinus* Fr.
26. Very large; pileus 15 cm., white, fulvous when dry. *L. vellereus* B. & C.  
Smaller; pileus 2-6 cm., purplish, then reddish-brown.  
*L. strigosus* (Schw.) Fr. (= *L. Lecomtei* Fr.).

## THE PUBESCENCE OF SPECIES OF ASTRAGALUS

BY FRANCIS RAMALEY

While making a study of leaf anatomy in the genus *Astragalus*, a difference was noted in the character of the trichomes in the different species. There are two kinds of hairs. Both are straight and simple with small basal cell and elongated end cell. In one kind of hair the end cell is straight and tapers to the point. The basal portion is the thickest part of the cell. This is shown in Fig. 1, which is a surface view of the lower epidermis of *Astragalus racemosus* Pursh. In the other kind of hair, the end cell is pointed cigar-shaped and attached some distance from one of the ends. Fig. 2 shows the appearance of these hairs in surface view of the lower epidermis of *A. Carolinianus* L. The mode of attachment will be recognized in Fig. 3, which is from a vertical section of the leaf of the same species. These cigar-shaped, double-pointed hairs are recorded for *Astragalus* by Solereder,<sup>1</sup> but no figure is given in his work. He calls them "two-armed" hairs.

Specimens of eight species were examined by the writer. In each of these eight, so far as might be judged from the material

<sup>1</sup> Syst. Anat. Dicotyledonen, 305. 1899.